AD 2. AERODROMES

AD 2.1 Aerodrome Location Indicator and Name

For the ICAO location indicators used for Canadian aerodromes, refer to the following publications:

*Canada Flight Supplement* or *Water Aerodrome Supplement*, Section A, “General Section – Cross Reference of Aerodrome Location Indicator & Name”

AD 2.2 Aerodrome Geographical and Administrative Data

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading REF that contains reference information, including the following geographical and administrative data:

- The aerodrome reference point or the aerodrome geometric centre coordinates, as applicable (geographical coordinates in degrees, minutes and seconds), and its site;
- The direction and distance of the aerodrome reference point or the aerodrome geometric centre coordinates, as applicable, from the centre of the city or town that the aerodrome serves;
- The aerodrome elevation;
- The magnetic variation to the nearest degree (Canada does not currently provide date of information and annual change for magnetic variation); and
- The types of traffic permitted to use the aerodrome (instrument flight rules (IFR) or visual flight rules (VFR) or both).

For reference temperature, refer to the weather office on Environment Canada’s website:

<weatheroffice.ec.gc.ca/canada_e.html>

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading OPR (operator) that contains operator information, including the name of the aerodrome’s administration and its contact information.

Canada does not currently provide geoid undulation at the aerodrome elevation position.

AD 2.3 Operational Hours

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome contains information on the hours of operation for the services at the aerodrome, if they are provided, under the indicated subheadings:

- For aerodrome administration, refer to the subheading OPR;
- For customs and immigration, refer to the subheading CUST;
- For health and sanitation, refer to the subheading PF (Public Facilities);
- For air traffic services (ATS) reporting office (ARO), refer to the subheading FLT PLN (Flight Planning);
- For the meteorological (MET) briefing office, refer to the subheading FLT PLN;
For ATS, refer to the subheadings FLT PLN and COMM (communications); For fuelling and handling, refer to the subheading SERVICES; and For de-icing, refer to the subheading SERVICES; also refer to the Canada Air Pilot, Volumes 1–7, or the Restricted Canada Air Pilot.

The hours of operation for security can be obtained by contacting the operator of the aerodrome. For contact information, refer to the Canada Flight Supplement or the Water Aerodrome Supplement, Section B, “Aerodrome/Facility Directory,” under the subheading OPR. The hours of service of the aeronautical information service (AIS) briefing office can be obtained by contacting the AIS head office at NAV CANADA. For contact information, refer to the following publications:

Canada Flight Supplement or Water Aerodrome Supplement, Section A, “General Section – Corrections (Civil)”

AD 2.4 Handling Services and Facilities

In the Canada Flight Supplement and the Water Aerodrome Supplement, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome may have a subheading SERVICES that contains a description of the handling services and facilities available at the aerodrome.

AD 2.5 Passenger Facilities

In the Canada Flight Supplement and the Water Aerodrome Supplement, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome may have a subheading PF that contains information on hotels, restaurants, transportation services, and medical facilities at the aerodrome. For information on banking and post office services, and whether there is a tourist office at the aerodrome, contact the operator. For contact information, refer to the subheading OPR.

AD 2.6 Rescue and Firefighting Services

In the Canada Flight Supplement, Section B, “Aerodrome/Facility Directory,” if the table for an aerodrome has a subheading SERVICES and the aerodrome has rescue and firefighting services and equipment, they will be listed under the ARFF (Aircraft Rescue and Firefighting) entry. If the subheading SERVICES does not appear or does not contain an ARFF entry, then rescue and firefighting services and equipment may not be available at the aerodrome. Contact the aerodrome operator for further information. For contact information, refer to the subheading OPR.

AD 2.7 Seasonal Availability – Clearing

Information on the equipment and operational priorities established for the clearance of aerodrome movement areas is not currently provided by NAV CANADA. This information may be available by contacting the aerodrome operator listed in the Canada Flight Supplement, Section B, “Aerodrome/Facility Directory,” under the OPR subheading.
AD 2.8 Aprons, Taxiways and Check Locations or Positions Data

With the exception of the differences filed with ICAO by Canada, information related to the physical characteristics of aprons, taxiways and locations or positions of designated checkpoints at aerodromes can be found on the aerodrome sketches in the following publications:

- *Canada Air Pilot*, Volumes 1–7, or the *Restricted Canada Air Pilot*
- *Canadian Airport Charts*

The latest version of the *Canadian Airport Charts* is available in portable document format (PDF) on the Aeronautical Information Products section of the NAV CANADA website:

<www.navcanada.ca>
- Products & Services
  - Aeronautical Information Products
  - *Canadian Airport Charts*
  - Current Issue

AD 2.9 Surface Movement Guidance and Control System and Markings

For information on the surface movement guidance and control system, and runway and taxiway markings at aerodromes, refer to the aerodrome sketches in the following publications:

- *Canada Air Pilot*, General, and Volumes 1–7, or *Restricted Canada Air Pilot*
- *Canadian Airport Charts*

The latest version of the *Canadian Airport Charts* is available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

<www.navcanada.ca>
- Products & Services
  - Aeronautical Information Products
  - *Canadian Airport Charts*
  - Current Issue

AD 2.10 Aerodrome Obstacles

Obstacle data is currently available through the visual flight rules (VFR) chart program, including VFR navigation charts, VFR terminal area charts (VTA), and world aeronautical charts. The provision of obstacle data through the VFR chart program is supplemented by the "VFR Chart Updating Data" subsection in the *Canada Flight Supplement or Water Aerodrome Supplement*, Section C, “Planning.”
Additional obstacle data is available by contacting NAV CANADA. Please note that there is a charge to access this data.

NAV CANADA
Customer Relations
77 Metcalfe Street
Ottawa, ON K1P 5L6
Canada

Tel.: 1-800-876-4693-4 (disregard the last digit if in North America)
Fax: +1 613-563-3426
E-mail: service@navcanada.ca

The following information can be provided:

- Obstacle identification;
- Type of obstacle;
- Community;
- Latitude (nearest second);
- Longitude (nearest second);
- Height above sea level (ASL) (nearest foot);
- Height above ground level (AGL) (nearest foot); and
- Status of obstacle lighting and painting.

**AD 2.11 Meteorological Information Provided**

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading FLT PLN that contains information on the meteorological information provided for the aerodrome.

For more information, including weather radar and satellite images, refer to the Aviation Weather Web Site on the NAV CANADA website:

<www.navcanada.ca>
Aviation Weather Web Site

**AD 2.12 Runway Physical Characteristics**

In the *Canada Flight Supplement*, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading RWY DATA that contains runway designations, magnetic bearings (true if in NDA), and dimensions for runways and strips. Strength of pavement of each runway may be available by contacting the aerodrome operator in the *Canada Flight Supplement*, Section B, “Aerodrome/Facility Directory,” under the OPR subheading.

*Canada Air Pilot*, Volumes 1–7, and *Restricted Canada Air Pilot*, provide the following information:

- Runway designations;
- Surface of each runway;
• Elevations of thresholds of non-precision approach (NPA) runways and elevations of thresholds and the highest elevation of the touchdown zone of precision approach runways; and

• Slope of each runway, when available.

Runway threshold coordinates (nearest hundredth of a second) are available by contacting NAV CANADA. Please note that there is a charge to access this data.

Please contact:

NAV CANADA
Customer Relations
77 Metcalfe Street
Ottawa, ON  K1P 5L6
Canada

Tel.: 1-800-876-4693-4 (disregard the last digit if in North America)
Fax: +1 613-563-3426
E-mail: service@navcanada.ca

AD 2.13 Declared Distances

For a description of declared distances for each direction of each runway, refer to the following publications:

Canada Air Pilot, Volumes 1–7, or Restricted Canada Air Pilot

AD 2.14 Approach and Runway Lighting

In the Canada Flight Supplement, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading LIGHTING that contains a description of approach and runway lighting.

AD 2.15 Other Lighting, Secondary Power Supply

In the Canada Flight Supplement, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading LIGHTING that contains a description of other lighting, including the following information:

• Location, characteristics and hours of operation of the aerodrome beacon or identification beacon (if any);

• Location and lighting (if any) of the landing direction indicator; and

• The taxiway edge and taxiway centre line lights.

For information on the secondary power supply, contact the operator of the aerodrome. In the Canada Flight Supplement, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading OPR that contains contact information.
AD 2.16 Helicopter Landing Area

For an indication as to whether the aerodrome has a heliport landing area, refer to the aerodrome sketches in the following publications:


- *Canada Air Pilot*, Volumes 1–7, or *Restricted Canada Air Pilot*

Also in the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for an aerodrome may have a subheading REF that contains the aerodrome’s geographical coordinates, which coincide with the helicopter landing area’s coordinates.

AD 2.17 Air Traffic Services Airspace

For the designation, geographical coordinates, classification and vertical limits of air traffic services (ATS) airspace organized at aerodromes in Canada, see the *Designated Airspace Handbook* (TP 1820E), available in PDF format on the Aeronautical Information Products section of the NAV CANADA website:

<www.navcanada.ca>
Products & Services
Aeronautical Information Products
*Designated Airspace Handbook*
Current Issue

For the call signs and languages of the ATS units providing service to ATS airspace organized at aerodromes in Canada, see the enroute low altitude, enroute high altitude and terminal area charts (see ENR Figure 3.1, “Index to Low Altitude Charts,” and ENR Figure 3.2, “Index to High Altitude Charts”).

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” when a visual flight rules (VFR) Terminal Procedures Chart is published for an aerodrome, it contains transition altitudes for the airspace organized at the aerodrome. See also the following publications:

- The appropriate terminal area chart or VFR terminal area chart (VTA)

AD 2.18 Air Traffic Services Communication Facilities

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading COMM that contains information on air traffic services (ATS) communication facilities established at the aerodrome.

AD 2.19 Radio Navigation and Landing Aids

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading NAV (navigation) that contains information on radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the aerodrome. See also the following publications:

- *Canada Air Pilot*, Volumes 1–7, or *Restricted Canada Air Pilot*

- The appropriate terminal area chart
AD 2.20 Local Traffic Regulations

In the Canada Flight Supplement and the Water Aerodrome Supplement, Section B, “Aerodrome/Facility Directory,” the table for an aerodrome may contain the subheadings PRO (procedures) or CAUTION or both, and these contain information on regulations applicable to the traffic at the aerodrome, including standard routes for taxiing aircraft, parking regulations, training flights, and similar information.

AD 2.21 Noise Abatement Procedures

In the Canada Flight Supplement and the Water Aerodrome Supplement, Section B, “Aerodrome/Facility Directory,” the table for an aerodrome may have a subheading PRO, which may contain information on the noise abatement procedures established at the aerodrome. See also the following publications:

Canada Air Pilot, General, Volumes 1–7 and Restricted Canada Air Pilot

AD 2.22 Flight Procedures

In the Canada Flight Supplement or the Water Aerodrome Supplement, Section B, “Aerodrome/Facility Directory,” when a visual flight rules (VFR) Terminal Procedures Chart is published for an aerodrome, it contains information on conditions and flight procedures, including radar procedures, established on the basis of airspace organization at the aerodrome. See also the following publications:

Canada Air Pilot, Volumes 1–7 and Restricted Canada Air Pilot

The process documentation concerning the submission of instrument procedures by external instrument procedure design organizations can be found on the NAV CANADA website:

<www.navcanada.ca>
Products & Services
Aeronautical Information Products
Aeronautical Information Submissions
External Design Organization Documents
P-IPD-101 IPD Submission Manual

Submissions will be accepted for both public procedures to be published in the CAP and restricted procedures to be published in the RCAP.
2.22.1 Duplicate Approach Procedure Identification

With the increase in instances of published duplicate approach procedures (same approach type to the same runway), changes were made to the Aeronautical Radio Incorporated (ARINC) 424 document to accommodate a duplicate approach procedure suffix in the procedure identifier record of an avionics database. This allows for all duplicate approach procedures to be coded and made available onboard aircraft with suitable avionics equipment.

However, many existing avionics units cannot accept this suffix in their procedure identification records. These units only allow for a four-character approach procedure identifier. For this reason, when duplicate approach procedures are published for an aerodrome, only one of the approach procedures can be coded into the databases of these particular avionics units.

To ensure the appropriate approach procedure is coded into avionics databases in these cases, NAV CANADA has developed and implemented a system for designating the predominant approach procedure. Duplicate approach procedures are differentiated using alpha characters starting with the last letter and continuing backward through the alphabet (Z, Y, X, etc.). The predominant approach procedure will be identified using the “Z” suffix (i.e., RNAV (GNSS) Z RWY 25). It is intended that the approach procedure identified with the “Z” suffix be the one procedure coded in an avionics database when only one duplicate approach procedure can be coded in the system. NAV CANADA assigns the “Z” suffix in accordance with the following priority:

1. Approach procedure intended for all/most customers vs. some customers.
2. Public approach procedure vs. restricted approach procedure.
3. Lower minima vs. higher minima.

Circling-only procedures are designated in Canada using alpha characters starting with the first letter of the alphabet (A, B, C, etc.). If similar database limitations exist with respect to circling-only procedures at the same aerodrome (i.e., NDB A, NDB B), the predominant approach procedure will be the procedure that has the first letter within the sequence (i.e., “A” predominant over “B”).

When an avionics database can accommodate duplicate approach procedures, all instrument procedures provided by NAV CANADA will be inserted into the database.

2.22.2 Management of Avionics Databases: Limited Storage Capability

To ensure the suitability of the available instrument procedures in general avionics databases that have limited storage capability, database providers shall only reduce the database inventory of available procedures on a whole aerodrome basis. When eliminating instrument procedures from a general avionics database for limited storage capacity reasons, all procedures existing for a given aerodrome (or aerodromes) must be removed. A general avionics database shall never contain only some of the instrument procedures for a specific aerodrome in Canada, unless this is necessary for reasons related to duplicate approach procedure identification. This practice may be applied in a larger scale by removing all procedures from all aerodromes within a specified area, region, or province.

Customized databases may continue to be compiled as requested by the customer for whom the custom database is intended. The rules described above pertaining to general avionics databases are not intended to be applicable to customized avionics databases.

Database coding providers and avionics manufacturers with questions or suggestions can contact NAV CANADA AIM Development at ncrga_ais_standards&@navcanada.ca.
2.22.3 Required Navigation Performance Authorization Required

Special authorization from Transport Canada is required to conduct required navigation performance (RNP) authorization required (AR) approaches in Canada. For more information, refer to Transport Canada Advisory Circular 700-024.

2.22.3.1 RNP Value

RNP AR approaches are designed in Canada using standard RNP values for each segment. These standard RNP values are shown in Table 2.22.3.

<table>
<thead>
<tr>
<th>Segment</th>
<th>Standard RNP Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeder / Transition</td>
<td>2.00</td>
</tr>
<tr>
<td>Initial</td>
<td>1.00</td>
</tr>
<tr>
<td>Intermediate</td>
<td>1.00</td>
</tr>
<tr>
<td>Final</td>
<td>0.30</td>
</tr>
<tr>
<td>Missed Approach</td>
<td>1.00</td>
</tr>
</tbody>
</table>

When circumstances require (i.e. obstacle environment, operational requirements, etc.) an RNP value other than the standard value may apply within the feeder / transition, initial or intermediate segment. In these cases, the RNP value is charted at the waypoint where the non-standard RNP value commences. The non-standard RNP value then continues until another non-standard value is specified or until a subsequent segment’s standard RNP value is equal to or less than the previous segment’s non-standard value.

Multiple RNP values may exist for the final segment and are represented with their applicable decision altitude (DA) in the approach minima section of the chart. Only the largest RNP value will be coded into the avionics database however pilots will have the ability to enter the lower values if their equipment permits.

When the missed approach segment requires an RNP value less than 1.00, the missed approach instruction includes the statement, "Missed approach requires RNP less than 1.00".

2.22.3.2 Use of Multiple Intermediate Fixes

In certain situations, RNP AR approach procedures will be designed with multiple intermediate fixes (IF). These waypoints will be identified on the approach chart as intermediate approach waypoints (IWP). In these cases, the profile view will only show the flight track from the first common waypoint to the missed approach waypoint (MAWP) and into the missed approach. Intermediate segment information will not be provided in the profile view but instead can be obtained from the plan view of the approach chart.

2.22.3.3 Validation of the Navigation Database for RNP AR Approaches

Validation of the navigation database for Canadian RNP AR approaches can be accomplished by referencing the data published in the AIRAC Canada document. AIRAC Canada can be obtained by contacting AIRAC@navcanada.ca. See section GEN 3.1.4, “AIRAC System.”

In addition to this, an arrangement to receive procedure data through a licencing agreement can be made by contacting NAV CANADA Customer and Commercial Services, service@navcanada.ca.
AD 2.23 Additional Information

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for an aerodrome may contain the subheadings PRO or CAUTION or both, and these may contain additional information on the aerodrome.

AD 2.24 Airport Operations General

Pilots must be particularly alert when operating in the vicinity of an airport. Increased traffic congestion, aircraft in climb and descent attitudes, and pilots preoccupied with cockpit duties are some of the factors that increase the accident potential near airports. The situation is further compounded when the weather only just meets visual flight rules (VFR) requirements.

Several operators have, for some time, been using their landing lights when flying at lower altitudes and within terminal areas, both during daylight hours and at night. Pilot comment has confirmed that the use of landing lights greatly increases the probability of the aircraft being seen. An important side benefit for improved safety is that birds appear to see aircraft showing lights in time to avoid them. It is therefore recommended that, when so equipped, all aircraft use landing lights during the take-off and landing phases and when flying below 2,000 feet above ground level (AGL) within terminal areas and aerodrome traffic patterns.

Air traffic control (ATC) towers equipped with radar have the capability to provide an increased level of service to the aviation community. The class of airspace determines the controller’s responsibilities vis-à-vis separation between instrument flight rules (IFR) and VFR aircraft, and between VFR and VFR aircraft. Control staff in certain towers will be able to assist aircraft to establish visual separation through the provision of radar vectors, radar monitoring and altitude assignments. Use of the radar will also result in more efficient control of VFR aircraft.

While aircraft shall not be operated at speeds greater than 200 Knots Indicated Airspeed (KIAS) below 3,000 feet AGL and within 10 nautical miles (NM) of a controlled aerodrome (CARs section 602.32), there is no mandatory speed restriction when operating in the vicinity of an uncontrolled aerodrome. As traffic levels at some of these aerodromes may be high from time to time, the risk of a possible mid-air collision is somewhat elevated during these periods. For this reason, it is recommended that pilots reduce their aircraft speed to the maximum extent possible when operating below 3,000 feet AGL and within 10 NM of an uncontrolled aerodrome.

Incidents have occurred when aircraft are being operated VFR within control zones, when the flight visibility is less than three miles due to local smoke, haze, rain, snow, fog or other condition. CARs section 602.114 requires a minimum of three miles ground visibility for VFR flight within a control zone. This visibility is, of course, taken by a person on the ground and does not preclude the possibility that the visibility aloft may be less. Good airmanship requires that a pilot encountering less than three miles flight visibility within a control zone will either:

- take action to avoid the area of reduced visibility; or
- remain clear of the area of reduced visibility and request a special VFR clearance from ATC.

Pilots shall maintain a listening watch on the appropriate tower frequency while under control of the tower. Whenever possible, requests for radio checks and taxi instructions should be made on the appropriate ground control frequency. After establishing initial contact with the control tower, pilots will be advised of any frequency changes required.
2.24.1 Wake Turbulence

Wake turbulence has its greatest impact on departure and arrival procedures; however, pilots should not assume that it will only be encountered in the vicinity of aerodromes. Caution should be exercised whenever a flight is conducted anywhere behind and at least 1,000 feet below a large aircraft.

2.24.1.1 Radar Vectoring

Controllers apply the following wake turbulence radar separation minima between a preceding instrument flight rules (IFR)/visual flight rules (VFR) aircraft and an aircraft vectored directly behind it and at less than 1,000 feet during any phase of flight.

Categories, weight limits, aircraft examples and separation criteria are indicated in the table below.

<table>
<thead>
<tr>
<th>Category</th>
<th>Limits</th>
<th>Examples</th>
<th>Separation (nautical miles [NM])</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPER HEAVY (S)</td>
<td>This category currently only applies to Airbus A380 aircraft with a maximum takeoff mass of 560,000 kg.</td>
<td>A380-800</td>
<td>• Super Heavy behind a Super Heavy – 4 miles.</td>
</tr>
</tbody>
</table>
| HEAVY (H)    | Aircraft types weighing less than 560,000 kg but more than 136,000 kg | B747/B777/B767 A340A330/MD11 | • Heavy behind a Super Heavy – 6 miles.  
|              |                                                                       |                | • Heavy behind a Heavy – 4 miles.                             |
| MEDIUM (M)   | Aircraft types weighing less than 136,000 kg but more than 7,000 kg   | B757/B737/A320 ERJ145/TU154 | • Medium behind a Super Heavy – 7 miles.  
|              |                                                                       |                | • Medium behind a Heavy – 5 miles.                            |
| LIGHT (L)    | Aircraft types weighing 7,000 kg or less                               | C150/C152 C172/ C182/PA38/PA2 | • Light behind a Super Heavy – 8 miles.  
|              |                                                                       |                | • Light behind a Heavy – 6 miles.                             
|              |                                                                       |                | • Light behind a Medium – 4 miles.                            |

2.24.1.2 Non-Radar Departures

Controllers will apply a two-minute separation interval to any aircraft that takes off into the wake of a known heavy aircraft if:

- the aircraft concerned commences the takeoff from the threshold of the same runway; or
- any following aircraft departs from the threshold of a parallel runway that is located less than 2,500 feet away from the runway used by the preceding heavy aircraft.

Note: Air traffic control (ATC) does not apply this two-minute spacing interval between a light following a medium aircraft in the above circumstances, but will issue wake turbulence advisories to light aircraft. Controllers will apply a three-minute separation interval to any aircraft that takes off into the wake of a known heavy aircraft, or a light aircraft that takes off into the wake of a known medium aircraft if:

- the following aircraft starts its takeoff roll from an intersection or from a point further along the runway than the preceding aircraft; or
- the controller has reason to believe that the following aircraft will require more runway length for takeoff than the preceding aircraft.

ATC will also apply separation intervals of up to three minutes when the projected flight paths of any following aircraft will cross that of a preceding heavy aircraft.

In spite of these measures, ATC cannot guarantee that wake turbulence will not be encountered.
2.24.1.3 Pilot Waivers

Air traffic control (ATC) tower controllers are required to advise pilots whenever a requested take-off clearance is denied solely because of wake turbulence requirements. The intention of this advisory is to make pilots aware of the reason for the clearance denial so that they may consider waiving the wake turbulence requirement. To aid in the pilot’s decision, the tower controller will advise the type and position of the wake-creating aircraft. The following phraseology will be used by the controller in response to a request for take-off clearance when wake turbulence is a consideration:

<table>
<thead>
<tr>
<th>Tower:</th>
<th>NEGATIVE, HOLD SHORT WAKE TURBULENCE. HEAVY BOEING 747, ROTATING AT 6,000 FT; or</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tower:</td>
<td>LINE UP AND WAIT, WAKE TURBULENCE, HEAVY DC10 AIRBORNE AT 2 MI.</td>
</tr>
</tbody>
</table>

Pilots are reminded that there are some circumstances where wake turbulence separation cannot be waived.

There may be departure situations, such as the presence of a steady crosswind component, where the full wake turbulence separation minima is not required. The pilot is in the best position to make an assessment of the need for wake turbulence separation. Although controllers are not permitted to initiate waivers to wake turbulence separation minima, they will issue takeoff clearance to pilots who have waived wake turbulence requirements on their own initiative, with the following exceptions:

- a light or medium aircraft taking off behind a heavy aircraft and takeoff is started from an intersection or a point significantly further along the runway, in the direction of takeoff; or
- a light or medium aircraft departing after a heavy aircraft takes off or makes a low or missed approach in the opposite direction on the same runway; or
- a light or medium aircraft departing after a heavy aircraft makes a low or missed approach in the same direction on the same runway.

A pilot-initiated waiver for a visual flight rules (VFR) departure indicates to the controller that the pilot accepts responsibility for wake turbulence separation. The controller will still issue a wake turbulence cautionary with the takeoff clearance. Controllers are responsible for ensuring wake turbulence minima are met for instrument flight rules (IFR) departures. More information on wake turbulence can be found in the AIR section of the Transport Canada Aeronautical Information Manual (TC AIM).

2.24.2 Noise Abatement

Pilots and operators must conform to the applicable provisions of CARs section 602.105, “Noise Operating Criteria”, and CARs section 602.106 “Noise Restricted Runways” (see Transport Canada Aeronautical Information Manual (TC AIM), RAC Annex) and the applicable noise abatement procedures published in the Canada Air Pilot.

Noise operating restrictions may be applied at any aerodrome where there is an identified requirement. When applied at an aerodrome, the procedures and restrictions will be set out in the Canada Flight Supplement, and shall include procedures and requirements relating to:

- preferential runways;
- minimum noise routes;
- hours when aircraft operations are prohibited or restricted;
- arrival procedures;
- departure procedures;
- duration of flights;
- the prohibition or restriction of training flights;
- visual flight rules (VFR) or visual approaches;
• simulated approach procedures; and
• the minimum altitude for the operation of aircraft in the vicinity of the aerodrome.

Transport Canada recognizes the need for analysis and consultation in the implementation of proposed new or amended noise abatement procedures or restrictions at airports and aerodromes. A process has been developed that includes consultation with all concerned parties before new or amended noise abatement procedures or restrictions can be published in the Canada Air Pilot or the Canada Flight Supplement. When the following checklist has been completed for the proposed noise abatement procedures or restrictions, and the resulting analysis has been completed and approved by Transport Canada, the noise abatement procedure or restriction will be published in the appropriate aeronautical publication.

1. Description of the problem
2. Proposed solution (including possible exceptions)
3. Alternatives (such as alternative procedures or land uses in the community)
4. Costs (such as revenue impact, direct and indirect costs to the community, airport operator and airport users)
5. Noise impacts of the proposed solution
6. Effects on aircraft emissions
7. Effect on current and future airport capacity
8. Implications of not proceeding with the proposal
9. Implementation issues (e.g. aircraft technology, availability of replacement aircraft, ground facilities)
10. Impact on the aviation system
11. Safety implications
12. Air traffic management
13. Fleet impact

A complete description of the process involved is available on the Transport Canada website:


2.24.3 Preferential Runway Assignments

At controlled airports, when selecting preferential runways for noise abatement or for other reasons, air traffic controllers consider the runway condition, the effective crosswind component and the effective tailwind component.

The maximum effective crosswind component considered in determining runway selection is 25 knots for arrivals and departures on DRY runways, and 15 knots on WET runways. The maximum effective tailwind component is 5 knots.

During consultation between NAV CANADA, aviation stakeholders and Transport Canada, it was decided that operations on the preferential runway should be allowed to continue when more than 25 percent of the runway is covered with a TRACE contaminant, provided:

• the airport operator has issued an Aircraft Movement Surface Condition Report (AMSCR) with a reported Canadian Runway Friction Index (CRFI) value in all segments of the runway greater than 0.40 or, if no AMSCR is received, an aircraft reports the braking action as being “good”; and
• the maximum crosswind component, including gusts, is 15 knots or less.
In conditions where more than 25 percent of the preferential runway is covered with a TRACE contaminant, the runway most nearly aligned into the wind must be selected if:

- the reported CRFI value in any segment of the runway is 0.40 or lower;
- the crosswind component rises above 15 knots; or
- a less than “good” braking action report is received from a pilot.

Although air traffic controllers may select a preferential runway in accordance with the foregoing criteria, pilots are not obligated to accept the runway for taking off or landing. It remains the pilot’s responsibility to decide if the assigned runway is operationally acceptable.

2.24.4 Runway Protected Area

Runway protected area procedures aim to ensure the runway protected area will be free of objects, which will provide a safe environment during aircraft operations in the event of a runway excursion, arrival undershoot, or departure overrun by an aircraft.

Air traffic control (ATC) and flight service station (FSS) will hold vehicles and pedestrians and ATC will hold taxiing aircraft at published holding positions or at least 200 feet from the runway edge until an aircraft taking off or landing has passed the holding traffic.

The airport operator may designate an alternate holding position at a distance from the runway edge that ensures no hazard is created for arriving or departing aircraft. The airport operator may also permit pedestrians to operate within the runway protected area when an aircraft is taking off or landing.

2.24.4.1 Controlled Airports

Air traffic control (ATC) will not clear an aircraft to take off or land if a holding position is transgressed. If a holding position is transgressed after a takeoff or landing clearance has been issued, ATC will cancel the clearance, unless doing so would create a hazardous situation for the aircraft.

2.24.4.2 Uncontrolled Airports

Flight service stations (FSS) will inform pilots of aircraft taking off or landing of runway protected area transgressions and seek the pilots’ intentions.

AD 2.25 Departure Procedures – Controlled Airports

The following departure procedures are based on those applicable for an aerodrome that has all available services, and are listed in the order that they would be used. At smaller, less equipped airports, some services will be combined, e.g. the instrument flight rules (IFR) clearance would be obtained from ground control where there is no separate clearance delivery frequency. Procedures solely applicable to IFR flight are briefly introduced here to establish their sequence. An elaboration thereof may be found in the Transport Canada Aeronautical Information Manual (TC AIM) section RAC 7.0, “Instrument Flight Rules –Departure Procedures.”

2.25.1 Automatic Terminal Information Service Broadcasts

If automatic terminal information service (ATIS) is available, a pilot should obtain the ATIS information prior to contacting either the ground control or tower. See Transport Canada Aeronautical Information Manual (TC AIM), RAC 1.3 for information on ATIS broadcasts.
2.25.2 Clearance Delivery

At locations where a “clearance delivery” frequency is listed, instrument flight rules (IFR) departures should call on this frequency, prior to requesting taxi authorization, normally no more than 5 minutes prior to engine start. Where a clearance delivery frequency is not listed, the IFR clearance will normally be given after taxi authorization has been received. At several major aerodromes, departing visual flight rules (VFR) aircraft are required to contact “clearance delivery” before taxiing. These frequencies, where applicable, are found in the COMM Section of the *Canada Flight Supplement*, for the appropriate aerodrome.

2.25.3 Radio Checks

If required, radio checks should, wherever possible, be requested on frequencies other than air traffic control (ATC) frequencies (see *Transport Canada Aeronautical Information Manual* (TC AIM), COM 5.10 for readability scale). Normally, the establishment of two-way contact with an agency is sufficient to confirm that the radios are functioning properly.

2.25.4 Requests for Push-back or Power-back

Since controllers may not be in a position to see all obstructions an aircraft may encounter during push-back or power-back, clearance for this manoeuvre will not be issued by the tower. Pilots are cautioned that it is their responsibility to ensure that push-back or power-back can be accomplished safely prior to initiating aircraft movement.

2.25.5 Taxi Information

Taxi authorization should be requested on the ground control frequency. At locations where a “Clearance Delivery” frequency is listed, pilots should obtain their instrument flight rules (IFR) clearance or a visual flight rules (VFR) code where applicable on this frequency prior to contacting ground control. Where no “Clearance Delivery” frequency is listed, the IFR clearance will normally be relayed by ground control before or after taxi authorization has been issued. If no flight plan has been filed, the pilot should inform the tower “Clearance Delivery”, where available, or ground control of the nature of the flight on initial contact, such as “local VFR” or “proceeding VFR to (destination)”.

| Pilot: | WINNIPEG GROUND, AZTEC GOLF JULIETT VICTOR HOTEL AT HANGAR NUMBER THREE, REQUEST TAXI–IFR EDMONTON EIGHT THOUSAND. |
| Ground control: | AZTEC GOLF JULIETT VICTOR HOTEL, WINNIPEG GROUND, RUNWAY (number), WIND (in magnetic degrees and knots), ALTIMETER (four-digit group giving the alimeter in inches of mercury), TAXI VIA (runway or other specific point, route), (other information, such as traffic, airport conditions), (CRFI, RSC, or RVR when applicable), CLEARANCE ON REQUEST. |
| Pilot: | GOLF JULIETT VICTOR HOTEL. |

Under no circumstances may a taxiing aircraft, whether proceeding to or from the active runway, taxi onto an active runway unless specifically authorized to do so.

Upon receipt of a normal taxi authorization, a pilot is expected to proceed to the taxi-holding position for the runway assigned for takeoff. If a pilot is required to cross any runway while taxiing towards the departure runway, the ground or airport controller will issue a specific instruction to cross or hold short. If a specific authorization to cross was not received, pilots should hold short and request authorization to cross the runway. Pilots may be instructed to monitor the tower frequency while taxiing or until a specific point, or they may be advised to “contact tower holding short.” The term “holding short,” when used during the communications transfer, is considered as a location and does not require a readback.

To emphasize the protection of active runways and to enhance the prevention of runway incursions, air traffic control (ATC) is required to obtain a readback of runway “hold” instructions. As a good operating practice, taxi authorizations that contain the instructions “hold” or “hold short” should be acknowledged by the pilot by providing a readback or repeating the hold point.
Examples of “hold” instructions that should be read back:

- HOLD or HOLD ON (runway number or taxiway);
- HOLD (direction) OF (runway number); or
- HOLD SHORT OF (runway number, or taxiway).

**Reminder:** In order to reduce frequency congestion, readback of ATC taxi instructions, other than those listed above, is not required in accordance with CARs section 602.31(1)(a); such instructions are simply acknowledged. With the increased simultaneous use of more than one runway, however, instructions to enter, cross, backtrack or line up on any runway should also, as a good operating practice, be acknowledged by a readback.

**Example:**

| Pilot: | CHARLIE FOXTROT ALFA BACKTRACKING RUNWAY TWO FIVE AND WILL REPORT IN THE HOLDING BAY. |

**Note:** To avoid causing clutter on controllers’ radar displays, pilots should adjust their transponders to “STANDBY” while taxiing and should not switch them to “ON” (or “NORMAL”) until immediately before takeoff.

The tower may instruct aircraft to “line up and wait.” Controllers will issue the name of the runway intersection or taxiway with the authorization if the line-up position is not at the threshold of the departing runway. When more than one entry point for the same runway is in use, ATC will also specify the runway entry point with the instruction to line up at the threshold.

### 2.25.6 Taxi Holding Positions

Authorization must be obtained before leaving a taxi holding position, or where a holding position marking is not visible or has not been established, before proceeding closer than 200 feet from the edge of the runway in use. At airports where it is not possible to comply with this provision, taxiing aircraft are to remain at a sufficient distance from the runway in use to ensure that a hazard is not created to arriving or departing aircraft.

### 2.25.7 Taxiway Holding Positions During Instrument Flight Rules Operations

It is imperative that aircraft do not proceed beyond taxiway holding signs at controlled airports until cleared by air traffic control (ATC). Aircraft proceeding beyond the taxiway holding position signs may enter electronically sensitive areas and cause dangerous interference to the glide path or localizer signals. In Canada, holding position signs and holding position markings normally indicate the boundaries of electronically sensitive areas, and provide safe obstruction clearance distances from landing runways.

When an airport is operating under CAT II/III weather conditions or when its CAT II/III operations plan is in effect, pilots are to observe CAT II or III mandatory holding position signs. When an airport is not operating under CAT II/III weather conditions, or its low visibility operations plan is not in effect, pilots need not abide by the CAT II or III taxiway holding positions and are expected to taxi to the normal taxiway holding position markings, unless advised otherwise by ATC.

At uncontrolled aerodromes, pilots awaiting takeoff should not proceed beyond the holding position signs or holding position markings until there is no risk of collision with aircraft landing, taxiing or departing.
2.25.8 Take-off Clearance

When ready for takeoff, the pilot shall request a take-off clearance and should include the runway number. Upon receipt of the take-off clearance, the pilot shall acknowledge it and take off without delay, or inform air traffic control (ATC) if unable to do so.

Example:

<table>
<thead>
<tr>
<th>Pilot:</th>
<th>TOWER, JULIETT GOLF TANGO READY FOR DEPARTURE, RUNWAY THREE SIX.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tower:</td>
<td>JULIETT GOLF TANGO, (any special information such as hazards, obstructions, turn after takeoff, wind information if required, etc.), CLEARED FOR TAKEOFF RUNWAY THREE SIX (or JULIETT GOLF TANGO, FROM GOLF, CLEARED FOR TAKEOFF RUNWAY THREE SIX).</td>
</tr>
<tr>
<td>Pilot:</td>
<td>JULIETT GOLF TANGO.</td>
</tr>
</tbody>
</table>

Pilots may request to use the full length of the runway for takeoff at any time. If the runway is to be entered at an intersection and back tracking is required, pilots should indicate their intentions and obtain a clearance for the manoeuvre before entering the runway.

Pilots may request, or the controller may suggest, takeoff using only part of a runway. The pilot’s request will be approved, provided noise abatement procedures, traffic, and other conditions permit. If suggested by the controller, the available length of the runway will be stated. It is the pilot’s responsibility to ensure that the portion of the runway to be used will be adequate for the take-off run.

To expedite movement of airport traffic and achieve spacing between arriving and departing aircraft, take-off clearance may include the word “immediate.” In such cases, “immediate” is used for the purpose of air traffic separation. On acceptance of the clearance, the aircraft shall taxi onto the runway and take off in one continuous movement. If, in the pilot’s opinion, compliance would adversely affect their operations, the pilot should refuse the clearance. Pilots planning a static takeoff (i.e. a full stop after “lined up” on the runway), or a delay in takeoff, should indicate this when requesting take-off clearance. ATC will specify the name of the taxiway or intersection with the clearance for takeoff from a taxiway or runway intersection. When more than one entry point for the same runway is in use, ATC will also specify the threshold as the point from which the take-off run will commence for those aircraft departing from the threshold. A controller may not issue a clearance that would result in a deviation from established noise abatement procedures or wake turbulence separation minima.

2.25.9 Release from Tower Frequency

Unless otherwise advised by air traffic control (ATC), pilots do not require permission to change from tower frequency once clear of the control zone and should not request release from this frequency or report clear of the zone when there is considerable frequency congestion. When practicable, it is recommended that a pilot of a departing aircraft monitor tower frequency until 10 nautical miles (NM) from the control zone.

Visual flight rules (VFR) flights will not normally be released from tower frequency while operating within the control zone. Once outside control zones, or when departing from an uncontrolled aerodrome where a mandatory frequency (MF) has been assigned, beyond the range within which MF procedures apply, pilots should monitor frequency 126.7 MHz.
2.25.10 Departure Procedures – No Radio (NORDO) Aircraft

Before proceeding to any portion of the manoeuvring area of a controlled airport, it is the pilot’s responsibility to inform the control tower of his/her intentions and make appropriate arrangements for visual signals.

**Note:** Before operating within a control zone with Class C airspace, a clearance shall be obtained from the control tower.

- A pilot should remain continuously alert for visual signals from the control tower.
- An aircraft should remain at least 200 feet from the edge of any runway where holding position markings or signs are not visible or have not been established unless a clearance for takeoff or to cross the runway has been received.
- When stopped by a red light, a pilot must wait for a further clearance before proceeding.
- When ready for takeoff by day, the pilot may attract the attention of the airport controller by turning the aircraft toward the tower.

**Acknowledgement of Visual Signals:** A pilot shall, where practical, acknowledge all clearances and instructions received by visual signals by day, by full movement of rudder or ailerons, whichever can be seen most easily (such movement should be repeated at least three times in succession), or by taxiing the aircraft to the authorized position.

2.25.11 Visual Signals

Visual signals used by the tower and their meanings are as follows:

<table>
<thead>
<tr>
<th>To Aircraft on the Ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>4</td>
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<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

2.25.12 Departure Procedures – Receiver Only (RONLY) Aircraft

The procedures which apply to aircraft without radio also apply to aircraft equipped with receiver only (RONLY), except that an airport controller may request the pilot to acknowledge a transmission in a specific manner. After the initial acknowledgement, no further acknowledgement, other than compliance with clearances and instructions, is necessary, unless otherwise requested by the controller.
AD 2.26 Traffic Circuits – Controlled Aerodromes

The following procedures apply to all aerodromes at which a control tower is in operation.

The traffic circuit consists of the crosswind leg, downwind leg, base leg and final approach leg.

![Figure 2.26: Standard Left-Hand Traffic Circuit](image)

**Notes:**

1. Circuit normally flown at 1,000 feet above aerodrome elevation (AAE).
2. Where a right-hand circuit is required in accordance with CARs section 602.96, the opposite of this diagram is applicable.

Entry to the circuit shall be made in such a manner so as to avoid cutting off other aircraft, conforming as closely as possible to the altitude (normally 1,000 feet AAE), speed and size of the circuit being flown by other traffic.

In order to increase safety by reducing the possibility of conflicting with departing traffic, aircraft approaching the active runway from the upwind side are to join the downwind leg abeam a point approximately midway between each end of the runway, taking into account aircraft performance, wind and/or runway length.

Pilots of no radio (NORDO) and receiver only (RONLY) aircraft, who have made specific arrangements to operate within the control zone (AD 2.27.5, “Arrival Procedures – No Radio (NORDO) Aircraft” and AD 2.27.6, “Arrival Procedures – Receiver Only (RONLY) Aircraft”), should approach the circuit from the upwind side, join crosswind at circuit height and, taking due account of other traffic, join the circuit on the downwind leg. Pilots are cautioned to remain clear of the approach and/or departure path of the active runway when joining the circuit (see Figure 2.26). Flights which are not in communication with the tower shall, at all times, be on the alert for visual signals. Pilots are reminded that below 3,000 feet above ground level (AGL) and within 10 nautical miles (NM) of a controlled aerodrome, aircraft shall not be operated at speeds greater than 200 Knots Indicated Airspeed (KIAS). However, where the minimum safe speed of the aircraft is greater than 200 KIAS, the aircraft may be operated at the minimum safe speed (CARs section 602.32).
AD 2.27 Arrival Procedures – Controlled Airports

If automatic terminal information service (ATIS) is available, all arrivals shall monitor this frequency to obtain the basic aerodrome information prior to contacting the tower. (See Transport Canada Aeronautical Information Manual (TC AIM), RAC 1.3 for ATIS information and refer to Transport Canada Aeronautical Information Manual (TC AIM), RAC 5.8 for arrival procedures in Class C airspace, other than a control zone.)

2.27.1 Initial Contact

Pilots must establish and maintain radio communications with the appropriate control tower prior to operating within any control zone served by an operational control tower. Also, if the control zone is Class B or C airspace, the appropriate clearance must be received from the controlling agency prior to entry.

When practical, it is recommended that the pilot make initial contact at least 5 minutes prior to requiring clearance or entering the zone.

2.27.2 Initial Clearance

On initial contact with the tower, unless the pilot advises receipt of automatic terminal information service (ATIS), the airport controller will inform the pilot of runway in use, wind direction and speed, altimeter setting and any other pertinent information. Following this, the pilot will receive clearance to proceed, including any necessary restrictions. The shortest routing to the runway may be expected if traffic permits. Pilots of visual flight rules (VFR) aircraft should check the Canada Flight Supplement (or a VFR terminal area chart [VTA] if applicable) for special procedures at the time of flight planning.

When a pilot is given a clearance “to the circuit” by air traffic control (ATC), it is expected that the aircraft will join the circuit on the downwind leg at circuit height. Depending on the direction of approach to the airport and the runway in use, it may be necessary to proceed crosswind prior to joining the circuit on the downwind leg.

The ATC phraseology “cleared to the circuit” authorizes a pilot to make a right turn in order to join crosswind, or partial right turn to join a left-hand circuit provided that the right turn or partial right turn can be carried out safely.

A straight-in approach is an approach where an aircraft joins the traffic circuit on the final leg without having executed any other portion of the circuit.

When an aircraft is cleared for a right-hand approach while a left-hand circuit is in effect, it shall be flown so as to join the circuit on the right-hand downwind leg, or join directly into the right-hand base leg, as cleared by the airport controller.

<table>
<thead>
<tr>
<th>Pilot: KELOWNA TOWER, CESSNA FOXTROT ALFA BRAVO CHARLIE, ONE FIVE MILES NORTH, SIX THOUSAND FIVE HUNDRED FEET VFR, REQUEST LANDING INSTRUCTIONS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tower: CESSNA FOXTROT ALFA BRAVO CHARLIE, KELOWNA TOWER, RUNWAY (number), WIND (direction in degrees magnetic, speed in knots), ALTIMETER (4-digit group in inches), (other pertinent instructions or information if deemed necessary), CLEARED TO THE CIRCUIT or CLEARED TO LEFT BASE LEG or CLEARED STRAIGHT-IN APPROACH.</td>
</tr>
<tr>
<td>Pilot: ALFA BRAVO CHARLIE.</td>
</tr>
</tbody>
</table>
When a pilot has received current landing information from the tower or the ATIS broadcast, initial clearance may be requested as follows:

Pilot: VICTORIA TOWER, CESSNA FOXTROT ALFA BRAVO CHARLIE (aircraft position), ALTITUDE, CHECK LANDING INFORMATION (or) WITH INFORMATION (ATIS code). REQUEST CLEARANCE TO THE CIRCUIT (or other type of approach).

Once established in the circuit as cleared, the pilot is to advise the tower accordingly.

Pilot: TOWER, ALFA BRAVO CHARLIE DOWNWIND.

Tower: ALFA BRAVO CHARLIE NUMBER (approach sequence number). If not Number 1, the tower will give the type, position and colour if significant, of aircraft to follow and other instructions or information.

Pilot: ALFA BRAVO CHARLIE.

Common ATC Phraseology:
- FOLLOW (aircraft type) NOW ON BASE LEG.
- EXTEND DOWNWIND.
- WIDEN APPROACH.

2.27.2.1 Visual Flight Rules Holding Procedures

When it is required by traffic, visual flight rules (VFR) flights may be asked to ORBIT visually over a geographic location, VFR checkpoint or call-up point (when these are published in the Canada Flight Supplement or VFR terminal area charts [VTA]) until they can be cleared to the airport. If the request is not acceptable, pilots should inform air traffic control (ATC) and state their intentions.

Pilot: TORONTO TOWER, CESSNA FOXTROT ALFA BRAVO CHARLIE, OVER PORT CREDIT AT THREE THOUSAND FIVE HUNDRED FEET WITH INFORMATION ROMEO.

Tower: CESSNA FOXTROT ALFA BRAVO CHARLIE, TORONTO TOWER, ORBIT THE FOUR STACKS, ANTICIPATE A FIVE MINUTE DELAY, TRAFFIC IS A CESSNA ONE SEVEN TWO OVER THE FOUR STACKS, LAST REPORTED AT TWO THOUSAND FEET.

The pilot is expected to proceed to the FOUR STACKS, orbit within visual contact of the checkpoint and be prepared to proceed to the airport immediately upon receipt of a further clearance. Left turns are recommended as terrain and collision avoidance are the pilot’s responsibilities.

Tower: ALFA BRAVO CHARLIE, REPORT LEFT BASE FOR RUNWAY TWO FOUR LEFT. CLEARED TO THE CIRCUIT.

Pilot: ALFA BRAVO CHARLIE DEPARTING THE FOUR STACKS AT THIS TIME, WILL REPORT LEFT BASE TO RUNWAY TWO FOUR LEFT; or

Pilot: ALFA BRAVO CHARLIE
2.27.3 Landing Clearance

At controlled airports, a pilot must obtain landing clearance prior to landing. Normally, the airport controller will initiate landing clearance without having first received the request from the aircraft; however, should this not occur, the onus remains upon the pilot to request such clearance in sufficient time to accommodate the operating characteristics of the aircraft being flown. No radio (NORDO) and receiver only (RONLY) aircraft should be considered as intending to land when they join and conform to the traffic circuit. Landing clearance will normally be given when an aircraft is on final approach. If landing clearance is not received, the pilot should, except in case of emergency, pull up and make another circuit.

| Pilot: | TOWER, ALFA BRAVO CHARLIE LANDING CLEARANCE RUNWAY TWO SIX. |
| Tower: | ALFA BRAVO CHARLIE, CLEARED TO LAND RUNWAY TWO SIX. |
| Pilot: | ALFA BRAVO CHARLIE. |

Controllers may, on occasion, authorize ground traffic to cross the landing runway after a landing clearance has been issued. Any such authorization by air traffic control (ATC) is given with the assurance that the runway will be clear of conflicting traffic at the time the arriving aircraft crosses the landing threshold. When it appears that the runway may not be clear for landing, the pilot will be advised to “CONTINUE APPROACH, POSSIBLE PULL-UP.” When a “pull-up” is necessary (before or after the landing clearance has been issued), the pilot shall abandon the approach and make another circuit.

| Tower: | ALFA BRAVO CHARLIE, TRAFFIC STILL ON RUNWAY, PULL UP AND GO AROUND. |

Common ATC Phraseology:

- CAUTION, POSSIBLE TURBULENCE FROM LANDING (aircraft type and position).
- MAKE LEFT/RIGHT THREE SIX ZERO.
- MAKE FULL-STOP LANDING.
- CONTACT TOWER/GROUND ON (frequency) WHEN OFF RUNWAY/ NOW.

The “cleared for the option” procedure has been introduced to give a pilot the option to make touch-and-gos, low approach, missed approach, stop-and-go, or a full stop landing. This procedure will normally be used during light traffic conditions.

| Pilot: | TOWER, ALFA BRAVO CHARLIE, DOWNWIND RUNWAY TWO SEVEN, REQUEST THE OPTION. |
| Tower: | ALFA BRAVO CHARLIE, CLEARED FOR THE OPTION RUNWAY TWO SEVEN. |

A clearance for multiple touch-and-gos permits the pilot to perform more than one touch-and-go during a single pass along the runway without stopping. The procedure is intended for student pilots training with an instructor and will only be authorized during light traffic conditions.

| Pilot: | TOWER, ALFA BRAVO CHARLIE, DOWNWIND RUNWAY TWO SEVEN, REQUEST MULTIPLE TOUCH-AND-GOS. |
| Tower: | ALFA BRAVO CHARLIE, CLEARED MULTIPLE TOUCH-AND-GOS, RUNWAY TWO SEVEN. |
2.27.4 Taxiing

A pilot must obtain an air traffic control (ATC) authorization to taxi on the manoeuvring area at a controlled airport. Unless otherwise instructed by the airport controller, aircraft are expected to continue in the landing direction to the nearest suitable taxiway, exit the runway without delay and obtain further authorization to taxi. No aircraft shall exit a runway onto another runway unless instructed or authorized to do so by ATC. When required, ATC will provide the pilot with instructions for leaving the runway. These instructions will normally be given to the pilot prior to landing or during the landing roll. When an aircraft is instructed to exit onto another runway, the pilot must:

- obtain further authorization to taxi; and
- remain on tower frequency until clear of that runway or until communication is transferred to ground control.

After landing on a dead-end runway, the pilot will normally be given instructions to backtrack. In all cases, after leaving the runway, unless otherwise instructed by ATC, pilots should continue to taxi forward across the taxi holding position lines or to a point at least 200 feet from the edge of the runway where a taxi holding position line is not available. The aircraft is not considered clear of the runway until all parts of the aircraft are past the taxi holding position line or the 200-foot point. When clearing landing runways onto taxiways or other runways, pilots should exercise good airmanship by continuing to taxi well clear of the hold position while contacting ground control to obtain taxi clearance. This is to prevent aircraft from blocking a runway exit to following aircraft. If unable to establish contact with ground control, pilots should stop and not cross any runway without receiving ATC authorization.

| Tower: ALFA BRAVO CHARLIE (instructions for leaving runway), CONTACT GROUND (specific frequency). |

Towers will normally provide the aircraft down time only when requested by the pilot.

Normally, aircraft will not be changed to ground control until off the active runway or runways.

| Tower: ALFA BRAVO CHARLIE, TAXI TO (apron or parking area) (any special instructions such as routing, traffic, cautionary or warning regarding construction or repair on the manoeuvring areas). |

2.27.5 Arrival Procedures – No Radio (NORDO) Aircraft

Before operating into a controlled aerodrome, pilots shall contact the control tower, inform the tower of their intentions and make arrangements for clearance through visual signals.

**Note:** Before operating within a control zone with Class C airspace, a clearance shall be obtained from the control tower.
Pilots should remain continuously alert for visual signals from the control tower.

<table>
<thead>
<tr>
<th>Traffic Circuit</th>
<th>The pilot should approach the traffic circuit from the upwind side of the runway, join crosswind at circuit height abeam a point approximately midway between each end of the runway and join the circuit on the downwind leg. While within the circuit the pilot should conform to the speed and size of the circuit, maintaining a separation from aircraft ahead so that a landing can be made without overtaking it. If it is necessary for a flight to cross the airport prior to joining crosswind, this should be done at least 500 feet above circuit height, and descent to circuit height should be made in the upwind area of the active runway.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Approach</td>
<td>Before turning on final approach, a pilot shall check for any aircraft on a straight-in approach.</td>
</tr>
<tr>
<td>Landing Clearance</td>
<td>Landing clearance will be given on final approach. If landing clearance is not received, the pilot shall, except in case of emergency, pull up and make another circuit. (Landing clearance may be withheld by the tower when there are preceding aircraft which have not landed or if the runway is occupied.)</td>
</tr>
<tr>
<td>Taxiing</td>
<td>No taxi clearance is required after landing, except to cross any runway or to taxi back to a turn-off point. When an aircraft's landing run carries it past the last available turn-off point, it should proceed to the end of the runway and taxi to one side, waiting there until instruction is received to taxi back to the nearest turn-off point.</td>
</tr>
</tbody>
</table>

2.27.6 Arrival Procedures – Receiver Only (RONLY) Aircraft

The procedures that apply to aircraft without radio also apply to aircraft equipped with receiver only (RONLY), except that an airport controller may request the pilot to acknowledge a transmission in a specified manner. After initial acknowledgement, no further acknowledgement other than compliance with clearances and instructions is necessary, unless otherwise requested by the controller.

2.27.7 Visual Signals

Visual signals used by the tower and their meanings are as follows:

<table>
<thead>
<tr>
<th>To Aircraft In Flight</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>STEADY GREEN LIGHT</td>
</tr>
<tr>
<td>2</td>
<td>STEADY RED LIGHT</td>
</tr>
<tr>
<td>3</td>
<td>SERIES OF GREEN FLASHES</td>
</tr>
<tr>
<td>4</td>
<td>SERIES OF RED FLASHES</td>
</tr>
<tr>
<td>5</td>
<td>THE FIRING OF A RED PYROTECHNICAL LIGHT (see NOTE)</td>
</tr>
</tbody>
</table>

**Note:** Military control towers only.
Acknowledgement of Visual Signals

A pilot shall, where practicable, acknowledge all clearances and instructions received. Signals may be acknowledged as follows:

- distinct rocking of aircraft in flight;
- at night, by a single flash of a landing light.

2.27.8 Communications Failure – Visual Flight Rules

(a) CARs section 602.138 specifies that where there is a two-way radio communication failure between the controlling air traffic control unit and a visual flight rules (VFR) aircraft while operating in Class B, Class C or Class D airspace, the pilot-in-command shall:
   (i) leave the airspace
       A. where the airspace is a control zone, by landing at the aerodrome for which the control zone is established, and
       B. in any other case, by the shortest route;
   (ii) where the aircraft is equipped with a transponder, set the transponder to Code 7600; and
   (iii) inform an air traffic control unit as soon as possible of the actions taken pursuant to (i).

(b) Should the communications failure occur while operating outside of Class B, C, or D airspace precluding the pilot from obtaining the appropriate clearance to enter or establishing radio contact, and if no nearby suitable aerodrome is available, the pilot may enter the Class B, C or D airspace, continue under VFR, and shall carry out the remaining procedures listed in (a).

 Should the communications failure occur and there is a suitable aerodrome nearby at which the pilot wishes to land, it is recommended that the pilot comply with the established no radio (NORDO) arrival procedure outlined in AD 2.27.5, “Arrival Procedures – No Radio (NORDO) Aircraft”.

Pilots operating VFR in either Class E or G airspace may follow the procedures in (a) even though there is no intention to enter Class B, C, or D airspace.

2.27.9 Operations on Intersecting Runways

Air traffic control (ATC) procedures allow for sequential and/or simultaneous operations on intersecting runways. Their intent is to increase airport traffic capacity, thus reducing delays and saving fuel. These operations differ only in the controllers’ application of ATC procedures; ATC advisories will specify the type of operation(s) in progress.

2.27.9.1 Sequential Operations

Sequential operations do not permit controllers to allow either an arriving aircraft to cross the arrival threshold or a departing aircraft to commence its takeoff roll until certain conditions are met.

For an arriving aircraft (Figure 2.27.9.1) the conditions are as follows:

- the preceding departing aircraft has:
  - passed the intersection, or
  - is airborne and has turned to avoid any conflict;

- the preceding arriving aircraft has:
  - passed the intersection, or
− completed its landing roll and will hold short of the intersection (i.e. stopped or at taxi speed), or
− completed its landing roll and turned off the runway.

![Figure 2.27.9.1: Arriving Aircraft](image)

For a **departing** aircraft (Figure 2.27.9.2) the sequential conditions are listed below:

- the preceding **departing** aircraft has:
  − passed the intersection; or
  − is airborne and has turned to avoid any conflict;
- the preceding **arriving** aircraft has:
  − passed the intersection; or
  − completed its landing roll and will hold short of the intersection (i.e. is stopped or at taxi speed); or
  − completed its landing roll and turned off the runway.

![Figure 2.27.9.2 Departing Aircraft](image)
2.27.9.2 Simultaneous Operations

Simultaneous operations differ from sequential operations in the application of air traffic control (ATC) procedures. The procedures for simultaneous use of intersecting runways are applied only between two arrivals or an arrival and a departure. Air traffic controllers will permit an arriving aircraft to cross the runway threshold or a departing aircraft to begin its takeoff roll provided one of the aircraft has accepted a clearance to land and hold short of the intersecting runways (Figure 2.27.9.3). These operations are known as Land and Hold Short Operations (LAHSO).

General

LAHSO may be carried out under the following conditions:

- the landing distance available (LDA), measured from the threshold or displaced threshold to 200 feet short of the nearest edge of the runway being intersected must be published in the Canada Air Pilot and in the Canada Flight Supplement. ATC shall also broadcast LAHSO advisories, including LDAs, through an automatic terminal information service (ATIS) or voice advisory, well in advance of the final approach descent;
- the weather minima of a 1,000-foot ceiling and visibility of three statute miles are required. In specific cases, these criteria may be reduced by the Regional Director, Civil Aviation, but only with a written agreement between ATC and the operator;
- the reported braking action must be not less than “good.” The runway must be bare. (No snow, slush, ice, frost, or standing water is visible from the tower or reported by a competent person. In order to accommodate small accumulations of ice or snow at the runway edge during winter operations, only the centre 100 feet of the runway must be bare);
- a tailwind of less than 5 knots is acceptable for normal LAHSO on both dry and wet runway operations. The maximum allowable crosswind component for dry runways is 25 knots and 15 knots for LAHSO. Controllers will not initiate or approve a request for LAHSO on any runway when crosswinds on that runway exceed the maximum;
- ATC must include specific directions to hold short of an intersecting runway (e.g. “cleared to land Runway 27, hold short of Runway 36”). Pilots, in accepting the clearance, must read back “cleared to land Runway 27, hold short of Runway 36.” Having accepted the hold-short clearance, pilots are obligated to remain 200 feet short of the closest edge of the runway being intersected. If, for any reason, a pilot is unsure of being able to comply with a hold-short clearance, the pilot must advise ATC immediately of non-acceptance of the clearance; it is far better to be safe than sorry;
- the lines are the same as taxiway exit and holding markings. These lines shall be located on the runway 90° to the hold-short runway centreline, 200 feet short of the nearest edge of the runway being intersected. Red and white mandatory instruction signs, illuminated for night LAHSO, shall be located at either end of the lines. More details on lines can be found in Aerodrome Standards and Recommended Practices (TP 312E); and
- for tactical ATC reasons, controllers may offer or approve a pilot request for the use of a dry runway for landing with a tailwind not exceeding 10 knots. LAHSO will not be authorized on wet runways if the tailwinds are 5 knots or more.

Note: LAHSO are not authorized if thunderstorms, turbulence, wind shear or other conditions exist that would adversely affect the restricted aircraft’s ability to hold short after landing.
For simultaneous operations involving helicopters (Figure 4.27.9.4), if the arriving helicopter has a hold-short clearance, its point of landing is at least 700 feet from the centreline of the other runway.
Wet Runways

The following conditions are applicable for wet runway operations:

- no Group 6 aircraft shall be instructed to hold short of an intersecting runway;
- stopping distances for Group 1, 2 and 3 aircraft are increased by 15% (see Note); and
- the coefficient of friction on LAHSO runways must meet a minimum standard. The coefficient of friction will be measured in accordance with Airport Pavement Evaluation – Surface Friction (AK 68 35 000/TP 3716); only those runways with average coefficients of friction above 0.6 will be approved for wet runway LAHSO.

Note: Aircraft are categorized into groups requiring the following stopping distances:

<table>
<thead>
<tr>
<th>Group</th>
<th>Dry Runway</th>
<th>Wet Runway</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,650 feet</td>
<td>1,900 feet</td>
</tr>
<tr>
<td>2</td>
<td>3,000 feet</td>
<td>3,500 feet</td>
</tr>
<tr>
<td>3</td>
<td>4,500 feet</td>
<td>5,200 feet</td>
</tr>
<tr>
<td>4</td>
<td>6,000 feet</td>
<td>6,000 feet</td>
</tr>
<tr>
<td>5</td>
<td>8,000 feet</td>
<td>8,000 feet</td>
</tr>
<tr>
<td>6</td>
<td>8,400 feet</td>
<td>8,400 feet</td>
</tr>
</tbody>
</table>

These stopping distances are based on International Standard Atmosphere (ISA) conditions for sea-level runways. For higher airport elevations, the distances are adjusted for pressure altitude. An aircraft’s grouping is such that its normal stopping distance is approximately 50% of the available stopping distance.

2.27.9.3 General Provisions

- All pilots will be advised that simultaneous Land and Hold Short Operations (LAHSO) are in progress.
- Controllers will issue appropriate traffic information.
- Acceptance of a hold-short landing clearance indicates to the controller that a pilot is able to comply with the clearance. If for any reason a pilot elects to use the full length of a runway, or a different runway, the pilot should inform air traffic control (ATC) on or before receipt of the hold-short landing clearance.

Note: During sequential and/or simultaneous operations, ATC procedures and pilot compliance with clearance conditions will ensure aircraft separation (i.e. spacing between aircraft). Notwithstanding this, conflicts between aircraft may occur, particularly at runway intersections, if a pilot does not comply with a clearance or is unable to comply as a result of unforeseen circumstances, such as missed approaches, misjudged landings, balked landings or brake failures. In these circumstances, ATC will endeavour to provide traffic advisories and/or instructions to assist pilots with collision avoidance.

2.27.10 High Intensity Runway Operations (HIRO)

Several of Canada’s airports rank among North America’s busiest in total aircraft movements. The concept of High Intensity Runway Operations (HIRO) evolved from procedures developed by high density terminals in North America and Europe. HIRO is intended to increase operational efficiency and maximize capacity at those airports where it is employed, through the use of disciplined procedures applied by both pilots and air traffic controllers. HIRO is intended to minimize the occurrence of overshoots that result from slow-rolling and/or slow-clearing aircraft and offers the prospect of reducing delays overall, both on the ground and in the air. In its fullest application, HIRO enables air traffic control (ATC) to apply minimum spacing to aircraft on final approach to achieve maximum runway utilization.
The tactical objective of HIRO is to minimize runway occupancy times (ROT) for both arriving and departing aircraft, consistent with both safety and passenger comfort. Effective participation in HIRO results when the pilot of an arriving aircraft exits the runway expeditiously, allowing the following arriving aircraft to cross the threshold with a minimum time interval. In the case of an arrival and a subsequent departure, the arriving pilot clears the runway in a minimum ROT, permitting a departure before the next arrival crosses the threshold. The air traffic controller’s objective in HIRO is to optimize approach spacing. This can be best achieved when pilots reach and adhere to assigned speeds as soon as is practicable.

Effective participation in HIRO is achieved by satisfying the following key elements:

**Key elements for arrivals**

- The pilot’s objective should be to achieve minimum ROT, within the normally accepted landing and braking performance of the aircraft, by targeting the earliest suitable exit point and applying the right deceleration rate so that the aircraft leaves the runway as expeditiously as possible at the nominated exit.

- The expected runway exit point to achieve minimum ROT should be nominated during approach briefing. It is better, in terms of ROT, to select an exit you know you can make, rather than choose an earlier one, miss it, and then roll slowly to the next available exit.

- Upon landing, pilots should exit the runway without delay.

- High-speed exits have specific maximum design speeds. These speeds may be available through the appropriate airport authority.

**Key elements for departures**

- On receipt of a line-up clearance, pilots should ensure that they are able to line up on the runway as soon as the preceding aircraft has commenced its takeoff roll.

- ATC will expect aircraft to enter the runway at a suitable angle to quickly line-up on the centreline and, when possible, continue in to a rolling takeoff when cleared. Pilots should ensure that they are able to commence the takeoff roll immediately when a takeoff clearance is issued.

- Aircraft that need to enter the runway at right angles, to backtrack, or to use the full length of the runway will require extra time on the runway. Therefore, pilots should notify ATC before arriving at the holding area so that the controller can re-sequence departures to provide the extra time.

- Cockpit checks should be completed prior to line-up, and any checks requiring completion on the runway should be kept to a minimum. If extra time is required on the runway, ATC should be informed before the aircraft arrives at the holding area so that the controller can re-sequence departures to provide the extra time.

**AD 2.28 Aircraft Operations – Uncontrolled Aerodromes**

**2.28.1 General**

An uncontrolled aerodrome is an aerodrome without a control tower, or one where the tower is not in operation. There is no substitute for alertness while in the vicinity of an uncontrolled aerodrome. It is essential that pilots be aware of, and look out for, other traffic, and exchange traffic information when approaching or departing from an uncontrolled aerodrome, particularly since some aircraft may not have communication capability. To achieve the greatest degree of safety, it is essential that all radio-equipped aircraft monitor a common designated frequency, such as the published mandatory frequency (MF) or aerodrome traffic frequency (ATF), and follow the reporting procedures specified for use in an MF area, while operating on the manoeuvring area or flying within an MF area surrounding an uncontrolled aerodrome.
• **MF area** means an area in the vicinity of an uncontrolled aerodrome for which an MF has been designated. The area within which MF procedures apply at a particular aerodrome is defined in the Aerodrome/Facility Directory Section of the *Canada Flight Supplement*, under the subheading COMM. Normally, the MF area is a circle with a 5 nautical mile (NM) radius capped at 3,000 feet above aerodrome elevation (AAE).

At uncontrolled aerodromes without a published MF or ATF, the common frequency for the broadcast of aircraft position and the intentions of pilots flying in the vicinity of that aerodrome is 123.2 MHz.

At aerodromes within an MF area, traffic information may be exchanged by communicating with a flight service station (FSS), community aerodrome radio station (CARS), universal communications (UNICOM) operator, vehicle operator, or by a broadcast transmission. The vehicle control service (VCS) in conjunction with aerodrome advisory service (AAS) is normally provided at aerodromes served by an FSS. Some uncontrolled aerodromes are indirectly served by an FSS through a remote communications outlet (RCO) and may provide remote aerodrome advisory service (RAAS). As flight service specialists may be located some distance from an aerodrome, it is essential that they be kept fully informed of both aircraft and vehicle activity.

Other aerodromes are designated as having an ATF. At some aerodromes with a control tower or FSS, an ATF is designated for use when the air traffic facility is closed. If a radio-equipped vehicle is present at ATF aerodromes, pilots can contact the vehicle operator directly on the ATF to ascertain that no vehicle-aircraft conflict exists. Operators of such radio-equipped vehicles will also provide pilots with any other available information on runway status and presence of other aircraft or vehicles on the runway.

There are some remote airports where a voice generator module (VGM) connected to an Automated Weather Observation System (AWOS) (or Limited Weather Information System [LWIS]) continuously broadcasts weather information. An AWOS (or LWIS) broadcasts weather information that may differ from the aerodrome routine meteorological report (METAR) or aerodrome special meteorological report (SPECI) issued for the location. There may also be significant differences between broadcasts only a few minutes apart. Transport Canada recognizes that for any given site at any given time there can be only one official weather observation (METAR or SPECI), whether from a human observer or an automated station. As a result, it has been determined that although an AWOS (or LWIS) broadcast constitutes an additional source of accurate, up-to-the-minute weather information, it does not constitute an official weather observation (METAR or SPECI).

The wind and altimeter data obtained from an AWOS (or LWIS) via a VGM broadcast can be used to conduct an instrument approach. Therefore, at aerodromes where RAAS is provided and where AWOS (or LWIS) weather information is also available via a VGM broadcast, the wind and altimeter data may be omitted from the RAAS if the pilot indicates in the initial call to the FSS that the weather information has already been obtained from the VGM broadcast. To avoid unnecessary frequency changes and to assist in reducing frequency congestion, it is desirable that pilots acquire this weather information prior to entering either the MF or ATF area and inform the flight service specialist that they have the wind and altimeter information. On start-up at such an aerodrome, it would be desirable to listen to the VGM broadcast prior to taxiing.

The flight service specialist will advise pilots of below-minima conditions reported in the current official METAR or SPECI. This will ensure a common reference for pilots and air traffic services (ATS) personnel since instrument flight rules (IFR) or special visual flight rules (VFR) flight (SVFR) authorization would then be required to operate within the control zone. Pilots will also be advised of any other significant weather conditions reported in current METAR, SPECI, significant meteorological information (SIGMET), AIRMET or pilot weather report (PIREP), as appropriate, which may affect the safety of the flight. The flight service specialist will provide, upon request, the complete current METAR or SPECI for the location.

### 2.28.2 Traffic Circuit Procedures – Uncontrolled Aerodromes

The following procedures apply to all aircraft operating at aerodromes where airport control service is not provided except those aircraft following a standard instrument approach procedure. For procedures that apply to aircraft on a standard instrument approach, refer to *Transport Canada Aeronautical Information Manual* (TC AIM), RAC 9.0. Prior to joining a traffic circuit, all pilots should announce their intentions (see AD 2.28.6, “Use of Mandatory Frequency and Aerodrome Traffic Frequency”. All turns shall be to the left while operating in the circuit, unless a right-hand circuit has been specified in the *Canada Flight Supplement*. 

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Pilots operating aircraft under instrument flight rules (IFR) or visual flight rules (VFR) are expected to approach and land on the active runway. The active runway is a runway that other aircraft are using or are intending to use for the purpose of landing or taking off. Should it be necessary for aircraft to approach to, land on, or take off from a runway other than the active runway, it is expected that the appropriate communication between pilots and the ground station will take place to ensure there is no conflict with other traffic. Some pilots operating under VFR at many sites prefer to give priority to commercial IFR and larger types of aircraft. This practice, however, is a personal airmanship courtesy, and it should be noted that these aircraft do not establish any priority over other aircraft operating VFR at that aerodrome.

![Figure 2.28.2: Standard Left-hand Circuit Pattern](image)

**Notes:**

- The circuit is normally flown at 1,000 feet AAE.
- If a right-hand circuit is required in accordance with CARs section 602.96, the opposite of this diagram is applicable.

2.28.2.1 Joining the Circuit

Landing and takeoff should be accomplished on or parallel to the runway most nearly aligned into the wind. However, the pilot has the final authority and responsibility for the safe operation of the aircraft and another runway may be used if it is determined to be necessary in the interest of safety.

Unless otherwise specified or required by the applicable distance from cloud criteria, aircraft should approach the traffic circuit from the upwind side. Alternatively, once the pilot has ascertained without any doubt that there will be no conflict with other traffic entering the circuit or traffic established within the circuit, the pilot may also join the circuit on the downwind leg (Figure 2.28.2). When joining from the upwind side, plan the descent to cross the runway in level flight at 1,000 feet above aerodrome elevation (AAE) or the published circuit altitude. Maintain that altitude until further descent is required for landing.

If it is necessary for an aircraft to cross the airport before joining the circuit, it is recommended that the crossover be accomplished at least 500 feet above the circuit altitude.

All descents should be made on the upwind side or well clear of the circuit pattern.

**Aerodromes not within a mandatory frequency (MF) area:** Where no MF procedures are in effect, aircraft should approach the traffic circuit from the upwind side. Alternatively, once the pilot has ascertained without any doubt that there will be no conflict with other traffic entering the circuit or traffic established within the circuit, the pilot may join the circuit on the downwind leg (Figure 2.28.2).

**Aerodromes within an MF area when airport advisory information is available:** Aircraft may join the circuit pattern straight-in or at 45° to the downwind leg or straight-in to the base or final legs (Figure 2.26). Pilots should be alert for other visual flight rules (VFR) traffic entering the circuit at these positions and for instrument flight rules (IFR) straight-in or circling approaches.
Aerodromes within an MF area when airport advisory information is not available: Aircraft should approach the traffic circuit from the upwind side. Alternatively, once the pilot has ascertained without any doubt that there will be no conflict with other traffic entering the circuit or traffic established within the circuit, the pilot may join the circuit on the downwind leg (Figure 2.28.2).

Note: Where an uncontrolled aerodrome lies within an MF area, the pilot must follow the MF reporting procedures set out in CARs section 602.97 to CARs section 602.103 inclusive. (See AD 2.28.4, “Mandatory Frequency” and AD 2.28.7, “Visual Flight Rules Communication Procedures at Uncontrolled Aerodromes with Mandatory Frequency and Aerodrome Traffic Frequency Areas.”)

2.28.2.2 Continuous Circuits

Aircraft performing a series of circuits and landings should, after each takeoff, reach circuit altitude before joining the downwind leg.

2.28.2.3 Departing the Circuit or Airport

Aircraft departing the circuit or airport should climb straight ahead on the runway heading until reaching the circuit traffic altitude before commencing a turn in any direction to an enroute heading. Turns back toward the circuit or airport should not be initiated until at least 500 feet above the circuit altitude.

2.28.3 Helicopter Operations

Pilots of helicopters at uncontrolled aerodromes are urged to avoid air taxiing or low flying across runways and taxiway areas where risk of collision with unseen aircraft or vehicles exists.

In addition to maintaining a sharp look-out and practising good airmanship, generally, pilots should avoid ground or air taxiing and hovering where blown dust, sand or gravel could prove hazardous to other aircraft, or when debris could be blown onto paved surfaces.

2.28.4 Mandatory Frequency

Transport Canada has designated a mandatory frequency (MF) for use at selected uncontrolled aerodromes, or aerodromes that are uncontrolled between certain hours. Aircraft operating within the area in which the MF is applicable (MF area), on the ground or in the air, shall be equipped with a functioning radio capable of maintaining two-way communication. Reporting procedures shall be followed, as specified in CARs section 602.97 to CARs section 602.103 inclusive.

An MF area will be established at an aerodrome if the traffic volume and mix of aircraft traffic at that aerodrome is such that there would be a safety benefit derived from implementing MF procedures. There may or may not be a ground station in operation at the aerodrome for which the MF area has been established. When a ground station is in operation, for example, a flight service station (FSS), a remote communications outlet (RCO) through which remote aerodrome advisory service (RAAS) is provided, a community aerodrome radio station (CARS), or an approach universal communications (UNICOM), then all aircraft reports that are required for operating within, and prior to entering an MF area, shall be directed to the ground station. However, when the ground station is not in operation, then all aircraft reports that are required for operating within and prior to entering an MF area shall be broadcast. The MF will normally be the frequency of the ground station that provides the air traffic advisory services for the aerodrome. For the aerodromes with an MF, the specific frequency, distance and altitude within which MF procedures apply will be published in the Canada Flight Supplement.

Examples:

- MF – rdo 122.2 5 NM 3100 ASL
- MF – UNICOM (AU) ltd hrs O/T tfc 122.75 5 NM 3100 ASL
2.28.5 Aerodrome Traffic Frequency

An aerodrome traffic frequency (ATF) is normally designated for active uncontrolled aerodromes that do not meet the criteria listed in AD 2.28.4, “Mandatory Frequency”, for a mandatory frequency (MF). The ATF is established to ensure that all radio-equipped aircraft operating on the ground or within the area are listening on a common frequency and following common reporting procedures.

The ATF will normally be the frequency of the universal communications (UNICOM) where one exists or 123.2 MHz where a UNICOM does not exist. Trained vehicle operators who possess a valid radio-telephone licence and authorization to do so, can communicate with pilots using two-way communication on the ATF and provide information such as:

- position of vehicles on the manoeuvring area;
- position of other aircraft on the manoeuvring area; and
- runway condition, if known.

The specific frequency, distance and altitude within which use of the ATF is required will be published in the Canada Flight Supplement.

Example:

- ATF – tfc 123.2 5 NM 5500 ASL

Personnel providing Approach UNICOM service can also advise pilots on the ATF of the runway condition and position of vehicles or aircraft on the manoeuvring area.

Note: Pilots may be able to communicate with either the UNICOM or the vehicle operator if radio-equipped, and coordinate their arrival or departure while using normal vigilance to ensure safe operations. When communications cannot be established (no reply or NORDO) or the status of the runway is unknown, it is the pilot’s responsibility to visually ascertain the runway condition before landing or taking off.

The designation of an ATF is not limited to aerodromes only. An ATF may also be designated for use in certain areas other than the area immediately surrounding an aerodrome, where visual flight rules (VFR) traffic activity is high, and there is a safety benefit to ensuring that all traffic monitors the same frequency. For example, an ATF area could be established along a frequently flown corridor between two uncontrolled aerodromes. All aircraft operating within the area, below a certain altitude, would be requested to monitor and report intentions on one frequency. When such an area is designated, it will be specified either in an Aviation Notice, or in the Canada Flight Supplement.

2.28.6 Use of Mandatory Frequency and Aerodrome Traffic Frequency

When operating in accordance with visual flight rules (VFR), or in accordance with instrument flight rules (IFR) but in visual meteorological conditions (VMC), pilots have sole responsibility for seeing and avoiding other aircraft. Aural and visual alertness are required to enhance safety of flight in the vicinity of uncontrolled aerodromes. At uncontrolled aerodromes for which a mandatory frequency (MF) or aerodrome traffic frequency (ATF) has been designated, certain reports shall be made by all radio-equipped aircraft.

Note: Pilots operating VFR enroute in uncontrolled airspace or VFR on an airway should continuously monitor 126.7 MHz when not communicating on the MF or ATF.

Reports on either the MF or ATF have three formats:

- a directed transmission made to a ground station;
- a directed transmission made to a vehicle operator on the ATF; or
- a broadcast transmission that is not directed to any particular receiving station.
Whenever the Canada Flight Supplement indicates that reports are to be made to a ground station, the initial transmission should be made to the station. To assist in reducing frequency congestion, pilots are encouraged to use the phrase "HAVE NUMBERS" on the initial call to a ground station (arrival or departure) to indicate that they have received runway, wind and altimeter information from the previous aerodrome advisory. When operating outside an MF area, and when frequency congestion prevents pilots from making their mandatory calls, it is their responsibility to remain clear of the MF area until contact can be established with the flight service station (FSS). If operating inside an MF area, the pilot should continue as stated in previous radio transmissions.

Pilot:  FREDERICTON RADIO, PIPER FOXTROT X-RAY YANKEE ZULU. WE HAVE THE NUMBERS, SIX MILES SOUTHWEST AT THREE THOUSAND FIVE HUNDRED VFR. INBOUND FOR LANDING.

Should there be no acknowledgement of a directed transmission to a ground station or a vehicle operator, reports shall be made in the broadcast format unless the ground station or vehicle operator subsequently establishes two-way contact, in which case pilots shall resume communicating by directed transmission.

Examples:

Directed:  FREDERICTON RADIO, THIS IS PIPER FOXTROT X-RAY YANKEE ZULU BEACON INBOUND LANDING RUNWAY EIGHTEEN.

or,

FREDERICTION VEHICLES, THIS IS PIPER FOXTROT X-RAY YANKEE ZULU...

Broadcast:  FREDERICTON TRAFFIC, THIS IS PIPER FOXTROT X-RAY YANKEE ZULU...

2.28.7  Visual Flight Rules Communication Procedures at Uncontrolled Aerodromes with Mandatory Frequency and Aerodrome Traffic Frequency Areas

2.28.7.1  Radio-equipped Aircraft

The following reporting procedures shall be followed by the pilot-in-command of radio-equipped aircraft at uncontrolled aerodromes within a mandatory frequency (MF) area and should also be followed by the pilot-in-command at aerodromes with an aerodrome traffic frequency (ATF):

- **Listening Watch and Local Flying** [CARs section 602.97 (2)]
  - Maintain a listening watch on the mandatory frequency specified for use in the MF area. This should apply to ATF areas as well.

- **Before Entering Manoeuvring Area** [(CARs section 602.99)]
  - Report the pilot-in-command’s intentions before entering the manoeuvring area.

- **Departure** (CARs section 602.100)
  - Before moving onto the take-off surface, report the pilot-in-command’s departure intentions on the MF or ATF frequency. If a delay is encountered, broadcast intentions and expected length of delay, then rebroadcast departure intentions prior to moving onto the take-off surface;
  - Before takeoff, ascertain by radio on the MF or ATF frequency and by visual observation that there is no likelihood of collision with another aircraft or a vehicle during takeoff; and,
  - After takeoff, report departing from the aerodrome traffic circuit, and maintain a listening watch on the MF or ATF frequency until clear of the area.
• **Arrival** (CARs section 602.101)
  – Report before entering the MF area and, where circumstances permit, shall do so at least five minutes before entering the area, giving the aircraft’s position, altitude and estimated time of landing and the pilot-in-command’s arrival procedure intentions;
  – Report when joining the aerodrome traffic circuit, giving the aircraft’s position in the circuit;
  – Report when on downwind leg, if applicable;
  – Report when on final approach; and,
  – Report when clear of the surface on which the aircraft has landed.

• **Continuous Circuits** (CARs section 602.102)
  – Report when joining the downwind leg of the circuit;
  – Report when on final approach; stating the pilot-in-command’s intentions; and,
  – Report when clear of the surface on which the aircraft has landed.

• **Flying Through an MF Area** (CARs section 602.103)
  – Report before entering the MF or ATF area and, where circumstances permit, shall do so at least five minutes before entering the area, giving the aircraft’s position and altitude and the pilot-in-command’s intentions; and,
  – Report when clear of the MF or ATF area.

**Note:** In the interest of minimizing possible conflict with local traffic and minimizing radio congestion on the MF or ATF, pilots of en-route visual flight rules (VFR) aircraft should avoid passing through MF or ATF areas.

2.28.7.2 No Radio (NORDO)

No Radio (NORDO) aircraft will only be included as traffic to other aircraft and ground traffic as follows:

• **Arrival:** from five minutes before the estimated time of arrival (ETA) until ten minutes after the ETA, and

• **Departure:** from just prior to the aircraft departing until ten minutes after the departure, or until the aircraft is observed/reported clear of the MF area.

2.28.8 Aircraft Without Two-Way Radio (No Radio [NORDO]/Receiver Only [RONLY])

2.28.8.1 Prior Arrangements

Aircraft without a functioning two-way radio may operate on the manoeuvring area or within the mandatory frequency (MF) area associated with an uncontrolled aerodrome, provided:

• a flight service station (FSS), a community aerodrome radio station (CARS), or a remote communications outlet (RCO) through which remote aerodrome advisory service (RAAS) is provided, is located at the aerodrome and is operating at the time proposed for the operation; and

• prior arrangements have been made, by telephone or in person, with the appropriate agency, FSS, CARS, or in the case of a RAAS, the FSS.
Notes:

1. Prior arrangements for an aerodrome advisory service (AAS) location: phone the “emergency only” number listed in the Canada Flight Supplement under COMM / RADIO for the FSS serving the AAS location.

2. Prior arrangements for a RAAS location: the FSS or flight information centre (FIC) serving a RAAS location is shown in the Canada Flight Supplement under COMM / RCO for the RAAS location.
   
   (a) If an FSS serves the RAAS location: phone the “emergency only” number listed in the Canada Flight Supplement under COMM / RADIO for the FSS serving the RAAS location; or

   (b) If a FIC serves the RAAS location: phone the number listed in the Canada Flight Supplement under FLT PLAN / FIC for the RAAS location.

When a pilot-in-command intends to operate at an uncontrolled aerodrome for which an MF has been designated, the pilot-in-command shall ascertain by visual observations that no other aircraft or vehicle is likely to come into conflict with the aircraft during takeoff or landing.

Pilots of no radio (NORDO)/receiver only (RONLY) aircraft must be extremely vigilant when operating at either controlled or uncontrolled aerodromes and ensure through prior arrangements that other aircraft and vehicles will be informed of their presence within the area.

2.28.8.2 Traffic Circuits – No Radio (NORDO)/Receiver Only (RONLY)

When approaching an aerodrome, pilots of no radio (NORDO)/receiver only (RONLY) aircraft shall enter the circuit as illustrated in Figure 2.28.2 and ensure that the aircraft completes at least two sides of a rectangular circuit before turning on to the final approach path.

2.28.8.3 Receiver Only (RONLY)

When operating an aircraft equipped with a very high frequency (VHF) receiver capable of receiving transmissions on the mandatory frequency (MF), pilots shall maintain a listening watch on the MF when operating on the manoeuvring area or within the MF area.

AD 2.29 Helicopter Operations at Controlled Airports

Two modes of helicopter airborne taxiing operations have been defined to accommodate the movement of helicopters at controlled airports: these are “hover taxi” and “air taxi”.

Hover taxi is the movement of a helicopter above the surface of an aerodrome, in ground effect, and at airspeeds less than approximately 20 Knots Indicated Airspeed (KIAS). The actual height may vary; some helicopters require hover taxi above 25 feet above ground level (AGL) to reduce ground effect turbulence or provide clearance for cargo slingloads.

Air taxi is the movement of a helicopter above the surface of an aerodrome normally below 100 feet AGL. The pilot is solely responsible for selecting an appropriate height and airspeed for the operation being conducted, consistent with existing traffic and weather conditions. Pilots are cautioned about the possible loss of visual references when conducting air taxi operations. Because of the greater operating flexibility, an air taxi clearance is to be expected unless traffic conditions will not permit this mode of operation.

When a helicopter is wheel-equipped and the pilot wishes to taxi on the ground, air traffic control (ATC) should be informed when the clearance is requested.

Note: Helicopter pilots are reminded that aircraft, vehicle and personnel movements are not controlled on airport aprons, and that caution must be exercised at all times during any surface movement, hover or air taxiing.
AD 2.30 Charts Related to an Aerodrome

Canada Air Pilot, Volumes 1–7, and Restricted Canada Air Pilot, contain the following types of charts:

- Aerodrome and heliport charts,
- Aircraft parking and docking charts,
- Aerodrome taxi charts,
- Standard departure charts – instrument,
- Standard arrival charts – instrument,
- Instrument approach charts, and
- Visual approach charts.

Aerodrome obstacle charts (ICAO Type A) can be obtained by contacting the Aeronautical Publications Sales and Distribution Unit of NAV CANADA. For contact information, refer to GEN 3.2.3, “Purchase Arrangements.”

For area charts with departure and transit routes, and area charts with arrival and transit routes, refer to the following publications:

The appropriate enroute low altitude, enroute high altitude and terminal area charts (see ENR Figure 3.1, “Index to Low Altitude Charts,” and ENR Figure 3.2, “Index to High Altitude Charts”)

Canada does not currently provide precision approach terrain charts or radar minimum altitude charts.

For information on bird concentrations in the vicinity of aerodromes, refer to ENR 5.6, “Bird Migration and Areas with Sensitive Fauna.” This information can also be obtained from the aerodrome automatic terminal information service (ATIS). If the aerodrome has ATIS, it will be listed in the Canada Flight Supplement or the Water Aerodrome Supplement, Section B, “Aerodrome/Facility Directory,” table for the aerodrome under the subheading COMM.